

Remarks

A. Pending Claims

Claims 1, 3-7, 9-12, and 15-24 are pending. Claims 8, 10, 13, and 14 have been cancelled. Claims 1-21 were rejected. Claims 1, 3-7, 9, 12, 15, 17, and 20 have been amended. Claims 22-28 are new.

B. Claim Objections

Claim 8 was objected to containing an abbreviation. Claim 8 has been canceled.

C. Indefinite Claim Pursuant To 35 U.S.C. §112, Second Paragraph

Claim 8 was rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claim 8 has been canceled.

D. The Claims Are Not Anticipated by Mardis et al. Pursuant To 35 U.S.C. §102(b)

Claims 1, 3-7, 9-12, and 15-21 were rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 4,391,637 to Mardis et al. (hereinafter “Mardis”). Applicant respectfully disagrees with these rejections.

The standard for “anticipation” is one of fairly strict identity. A claim can only be anticipated if each and every element set forth in the claims is found to be either expressly or inherently described in the cited art. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 728, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP §2131.

Amended claim 1 recites:

1. A polymer composition comprising:

a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers; and

a synergistic flame retardant additive combination which comprises a nano-clay and a second filler, wherein during combustion of the composition, a coherent char is formed.

Support for the amendments to claim 1 may be found in Applicant's specification at pg. 5, lines 2-13 and in Applicant's examples starting on pg. 6, where ethyl vinyl acetate (e.g., Escorene Ultra 00119) is used as the polymer composition.

Mardis does not appear to teach or suggest the combination of features of claim 1 including, but not limited to, the feature of: "a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers." Mardis appears to describe use of polyvinyl chloride polymers. Mardis does not appear to teach or suggest use of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 1 is patentable and the claims dependent thereon are patentable over Mardis.

Claim 9 includes, but is not limited to, the feature of "a synergistic flame retardant additive combination, the synergistic flame retardant additive combination comprising a nano-clay and a second filler, wherein the second filler is selected from the group consisting of at least one of aluminum trihydroxide, magnesium carbonate, magnesium hydroxide, brucite ore, hydromagnesite, Huntite, boehmite and bauxite." Mardis appears to describe combining fillers such as calcium carbonate and talc with polyvinyl chloride polymers. Mardis does not appear to teach or suggest the use of aluminum trihydroxide, magnesium carbonate, magnesium hydroxide, brucite ore, hydromagnesite, Huntite, boehmite and bauxite as a filler. As such, Applicant submits claim 9 is patentable and the claims dependent thereon are patentable over Mardis.

For at least the reasons set forth above, claims 15 and 26, and the claims dependent thereon are patentable over Mardis.

E. The Claims Are Not Anticipated by Suss et al. Pursuant To 35 U.S.C. §102(b)

Claims 1, 3-7, 9-12, and 15-21 were rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 4,558,075 to Suss et al. (hereinafter “Suss”). Applicant respectfully disagrees with these rejections.

Suss does not appear to teach or suggest the combination of features of claim 1 including, but not limited to, the feature of: “a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers.” Suss appears to describe use of urethane and epoxy resins. Suss does not appear to teach or suggest use of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 1 is patentable and the claims dependent thereon are patentable over Suss.

Claim 9 includes, but is not limited to, the feature of “a synergistic flame retardant additive combination, the synergistic flame retardant additive combination comprising a nano-clay and a second filler, wherein the second filler is selected from the group consisting of at least one of aluminum trihydroxide, magnesium carbonate, magnesium hydroxide, brucite ore, hydromagnesite, Huntite, boehmite and bauxite.” Suss appears to describe combining fillers such as limestone and calcium carbonate with urethane and epoxy resins. Suss does not appear to teach or suggest the use of aluminum trihydroxide, magnesium carbonate, magnesium hydroxide, brucite ore, hydromagnesite, Huntite, boehmite and bauxite as a filler. As such, Applicant submits claim 9 is patentable and the claims dependent thereon are patentable over Suss.

For at least the reasons set forth above, claims 15 and 26, and the claims dependent thereon are patentable over Suss.

F. The Claims Are Not Anticipated by Liu et al. Pursuant To 35 U.S.C. §102(b)

Claims 1, 3-7, 9-12, and 15-21 were rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 6,084,008 to Liu et al. (hereinafter “Liu”). Applicant respectfully disagrees with these rejections.

Liu does not appear to teach or suggest the combination of features of claim 1 including, but not limited to, the feature of: “a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers.” Liu appears to describe use of phenol-formaldehyde resin and resorcinol-formaldehyde resin. Liu does not appear to teach or suggest use of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 1 is patentable and the claims dependent thereon are patentable over Liu.

Claim 9 includes, but is not limited to, the feature of “a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, epoxy resins, ABS combinations, halogenated polymers, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers.” Liu appears to describe use of phenol-formaldehyde resin and resorcinol-formaldehyde resin. Liu does not appear to teach or suggest use of polyesters, epoxy resins, ABS combinations, halogenated polymers, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 9 is patentable and the claims dependent thereon are patentable over Liu.

For at least the reasons set forth above, claims 15 and 26, and the claims dependent thereon are patentable over Liu.

G. The Claims Are Not Anticipated by Fukui et al. Pursuant To 35 U.S.C. §102(b)

Claims 1, 3-7, 9-13, and 15-21 were rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 5,091,462 to Fukui et al. (hereinafter “Fukui”). Applicant respectfully disagrees with these rejections.

Fukui does not appear to teach or suggest the combination of features of claim 1 including, but not limited to, the feature of: “a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers.” Fukui appears to describe use of polypropylene and polyamide resins. Fukui does not appear to teach or suggest use of polyesters, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 1 is patentable and the claims dependent thereon are patentable over Fukui.

Claim 9 includes, but is not limited to, the feature of “a polymer, wherein the polymer is selected from the group consisting of at least one of polyesters, epoxy resins, ABS combinations, halogenated polymers, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers.” Fukui appears to describe use of polypropylene and polyamide resins. Fukui does not appear to teach or suggest use of polyesters, epoxy resins, ABS combinations, halogenated polymers, polyethylene, polystyrene, silicones, silicone rubbers, ethyl vinyl acetate, and their copolymers. As such, Applicant submits claim 9 is patentable and the claims dependent thereon are patentable over Fukui.

For at least the reasons set forth above, claims 15 and 26, and the claims dependent thereon are patentable over Fukui.

H. The Claims Are Not Obvious Over The Cited Art Pursuant To 35 U.S.C. §103(a)

Claims 1, 3-7, 9-13, and 15-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Madris, Suss, Liu or Fukui. Applicant respectfully disagrees with this rejection.

In order to reject a claim as obvious, the Examiner has the burden of establishing a *prima facie* case of obviousness. *In re Warner et al.*, 379 F.2d 1011, 154 USPQ 173, 177-178 (C.C.P.A. 1967). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974), MPEP §2143.03.

Claim 1 describes a polymer composition for producing a coherent char that includes a combination of features including, but not limited to, the features of “a synergistic flame retardant additive combination which comprises a nano-clay and a second filler, wherein during combustion of the composition, a coherent char is formed.”

For at least the reasons set forth above, neither Madris, Suss, Liu nor Fukui appear to teach or suggest all of the combination of features of the claims. Moreover, there is no suggestion or motivation in Madris, Suss, Liu, or Fukui to select and choose features of the references to obtain Applicant’s claimed invention without hindsight reconstruction.

Whether or not “a particular combination might be ‘obvious to try’ is not a legitimate test of patentability.” *Id.* at 1599, citing *In re Geiger*, 815 F.2d 868, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987) and *In re Goodwin*, 576 F.2d 375, 377, 198 USPQ 871, 881 (CCPA 1981). Consequently, it is not permissible for the Examiner to “use hindsight reconstruction to pick and chose among isolated disclosures in the prior art to deprecate the claimed invention.” *Id.* at 1600.

The significant, synergistic effects observed when a polymer is modified with a nano-clay and a filler render the pending claims nonobvious. *Anderson’s-Black Rock, Inc. v. Pavement*

Salvage Co., 396 U.S. 57, 61 (1969). A “synergistic result” or “an effect greater than the sum of the several effects taken separately” is indicative of nonobviousness (*Id.*), and evidence showing unexpected synergistic effects must be considered in evaluating the nonobviousness of a claimed invention. *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1483 (Fed. Cir. 1997). In fact, such evidence is often the most probative evidence of nonobviousness. *Id.* Moreover, proof of the obviousness of a composition requires proof of the obviousness of the properties of that composition (*see In re Papesch*, 315 F.2d 381, 391 (C.C.P.A. 1963) (“From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing.”)) because obviousness is evaluated based on the invention as a whole. 35 U.S.C. § 103. Because the cited references fail to disclose or even suggest the possibility of improved flame retardant properties of a polymer modified with a nano-clay and a filler, let alone suggesting any synergistic effects for the combination, the pending claims are nonobvious.

For at least the reasons set forth above, claims 9, 10, 15, 24, and the claims dependent thereon are patentable over the cited art.

J. Additional Remarks

Applicant has submitted a fee authorization in the amount of \$50 for the excess claims fee. If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are due, the Commissioner is hereby authorized to deduct said fees from Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account No. 50-1505/5628-26102/EBM.

Respectfully submitted,



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